



Evaluation of ABO Mismatched Transfusion in Iran from September 2009 to September 2013

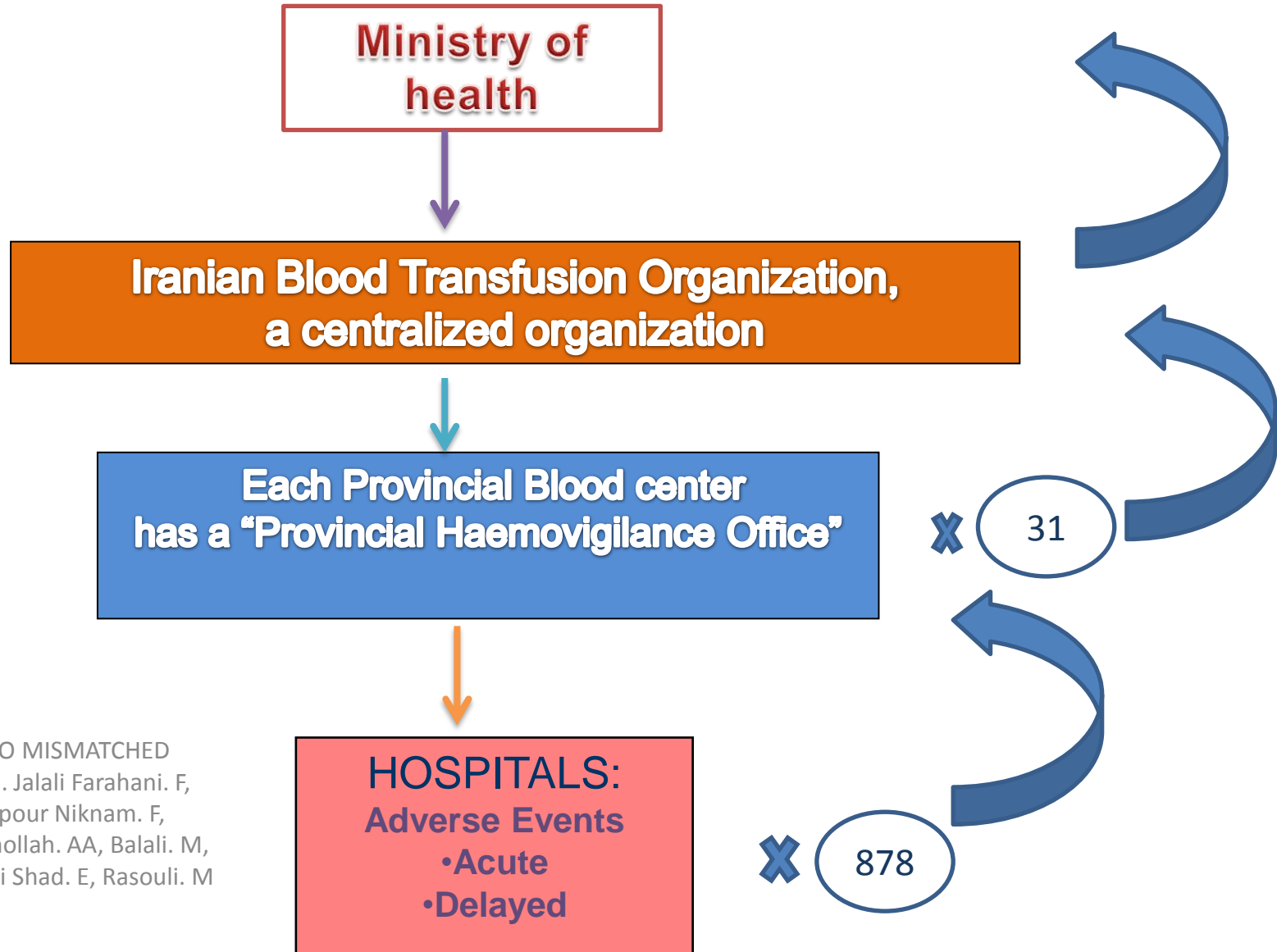
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Infrastructure for National TAR Reporting



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Iranian Blood Transfusion Organization Head center



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TRANSFUSION ADVERSE REACTION



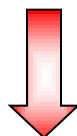
LEVEL I



LEVEL II



LEVEL III



LEVEL IV



MANAGEMENT ALGORITHM OF TRANSFUSION REACTION IN HOSPITALS

TRAINED NURSES



HAEMOVIGILANCE
DOCTORS



CONSULTANT
PHYSICIAN



IBTO
(Haemovigilance
office)

1. STOP TRANSFUSION
2. CONTACT WITH PHYSICIAN AND REPORT SIGNS & SYMPTOMS
3. COMPLETE THE FIRST PART OF ADVERSE REACTION FORM of TRANSFUSION

- 1- EVALUATE ADVERSE REACTION & GUIDE THE NURSES
- 2- COMPLETE THE REST OF ADVERSE REACTION FORM
- 3- DETERMINE THE ETIOLOGY
- 4- CONSULT WITH CONSULTANT PHYSICIAN IF NECESSARY
- 5-FAX THE FORM TO HAEMOVIGILANCE OFFICE

- 1- DETERMINE OR CONFIRM THE ETIOLOGY OF ADVERSE REACTION

- 1- ANALYSE THE REPORTED ADVERSE REACTION AND ISSUE THE RESULT TO HEALTH MINISTRY
- 2- DETERMINE CORRECTIVE ACTION FOR PREVENTION OF ADVERSE REACTION
- 3- SUPERVISION FOR CORRECTIVE ACTIONS



Background

- Iranian Blood transfusion Organization implemented a Mandatory Transfusion Transmitted Injuries Surveillance System (**TTISS**) to monitor adverse transfusion events (**ATEs**), 2009.
- In Iran, about 31% of hospitals (**278 out of 878**) have a haemovigilance system and report transfusion adverse reactions to haemovigilance office. There is a national system that collects all reports related to transfusion.



Iranian National Haemovigilance System (INHS)

The INHS existing system characteristics:

1. The legal status: **mandatory**.
2. the field of application: **all events** in the patient
3. the organisation: **centralised**
4. No near miss event report

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- We aimed to gather and analyze transfusion reactions to help prevent their occurrence and/or reoccurrence. We need to report the situation of hospitals in this regard towards the ministry of health to ask them to send new transfusion policies to the hospitals which are under their supervision.
- All transfusion policies prepare by IBTO.

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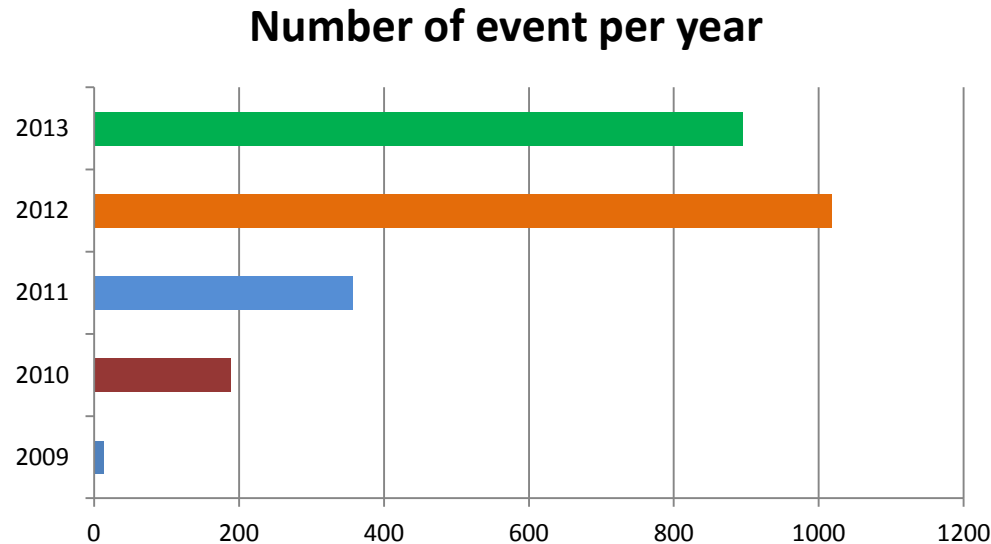
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- In a observational study, we used this database to evaluating and analyzing ABO mismatched transfusions from September 2009 to September 2013.

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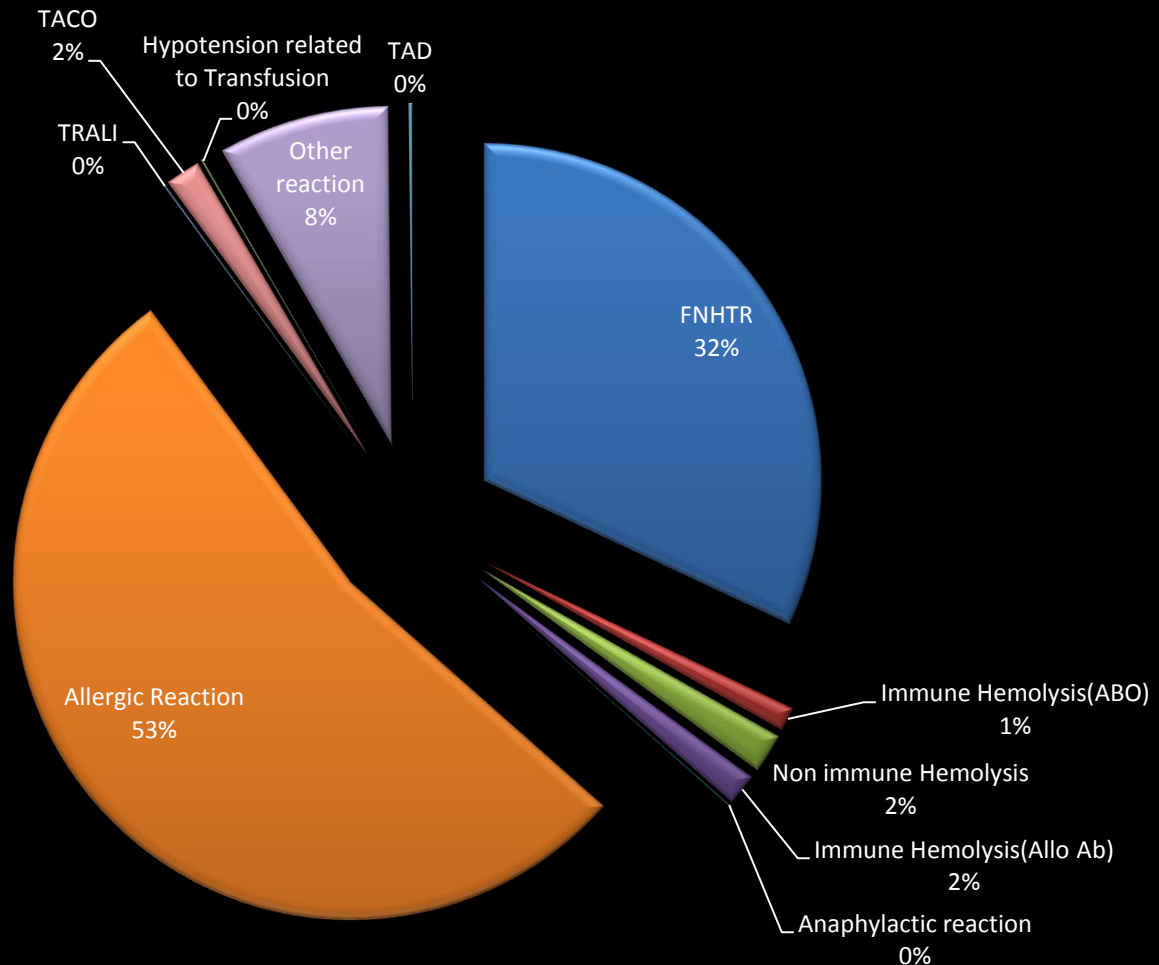


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- **Results :**
- There were 2469 reported transfusion complications from 278 hospitals in four years of which 28 were ABO mismatch events.
- Erroneous administration was observed for 21 of 100, 000 RBC unit administered. All of these events were due to human error.

Acute Adverse reactions



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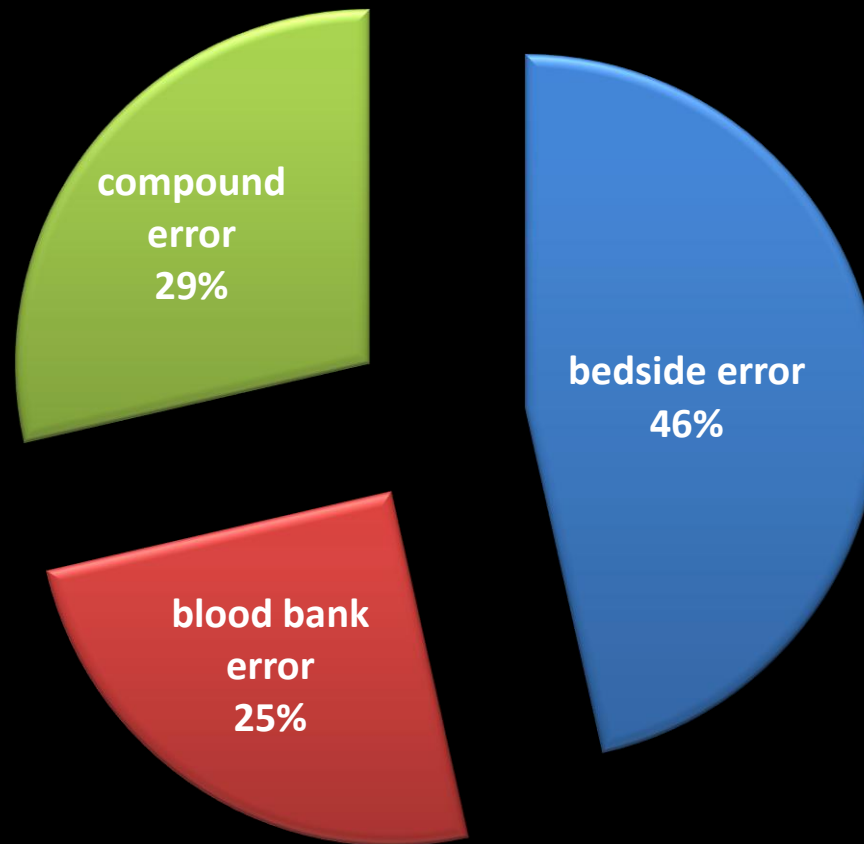


- All of these events were due to human error.
- All these cases were with adverse reactions and we were not reported non hazard ABO mismatched.
- **13 cases** happened at the **patient's bedside and out of the blood banks** due to lack of proper bedside patient identification.
- **7 cases** were caused by **blood bank errors**; including clerical and technical (lack of blood group testing or wrong technique).
- **8 cases** were related to **both blood bank and non-blood bank errors** including issue the wrong unit followed by lack of proper bedside checks before transfusion.

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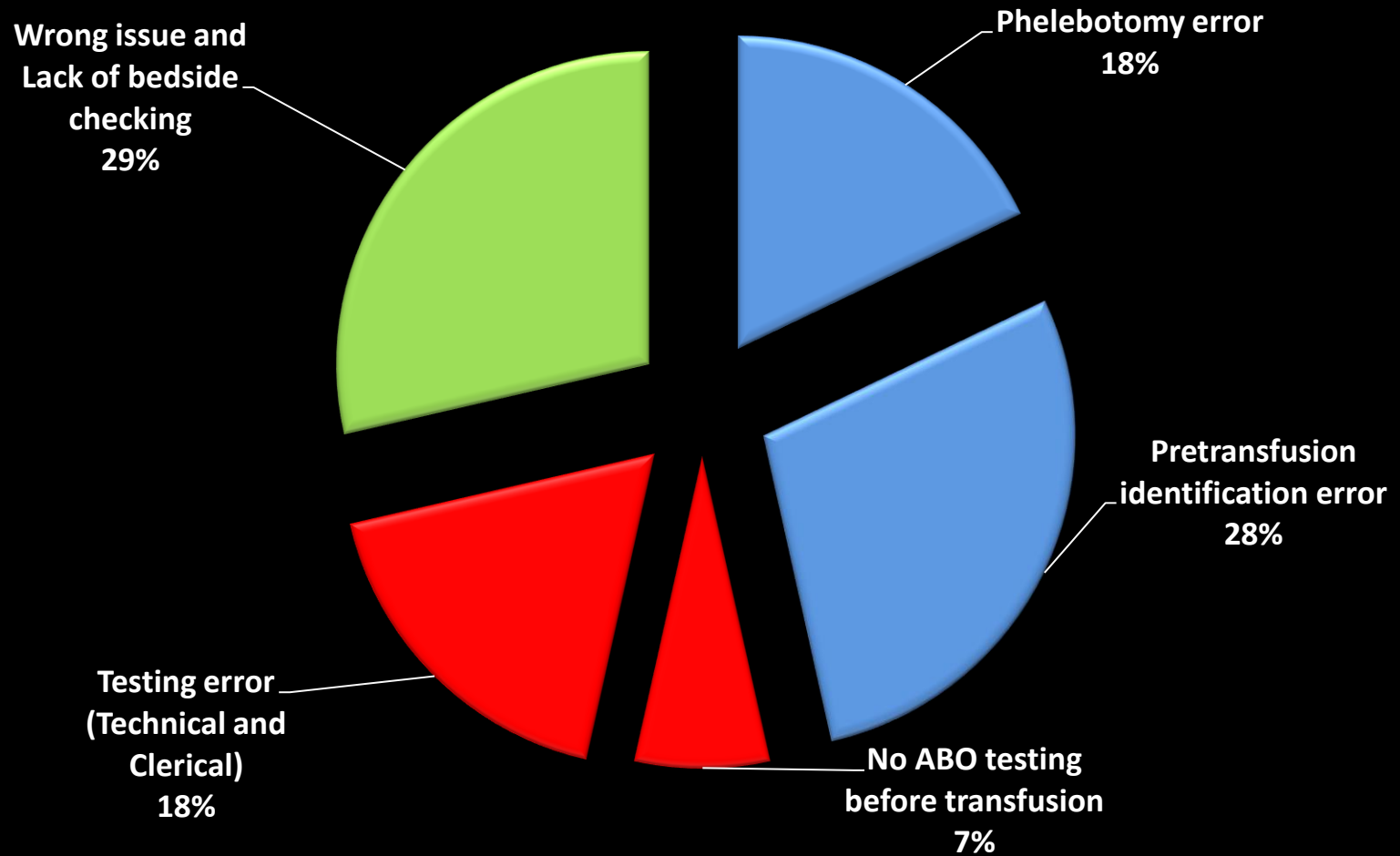
Nature of Error



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Error nature -2





| | Reported Signs | % |
|----|----------------------|-------|
| 1 | Chill | 46.4% |
| 2 | Agitation | 32.1% |
| 3 | Dyspnea | 28.6% |
| 4 | Fever | 17.9% |
| 5 | Back pain | 17.9% |
| 6 | Nausea & Vomiting | 14.3% |
| 7 | Palpitation | 14.3% |
| 8 | Oliguria | 14.3% |
| 9 | Hypotension | 14.3% |
| 10 | Chest Pain | 10.7% |
| 11 | Wizzing | 10.7% |
| 12 | Hypertension | 10.7% |
| 13 | Discomfort | 7.1% |
| 14 | Abdominal Pain | 7.1% |
| 15 | Respiratory Distress | 7.1% |
| 16 | Bleeding | 3.6% |
| 17 | DIC | 3.6% |



Outcome

| | 28 |
|----------------|----|
| Cured | 20 |
| Minimal sequel | 5 |
| Death | 3 |



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Laboratory finding

| | | | |
|-----|---------------|------------|-------------|
| LDH | increased =10 | Negative=0 | Not Done=18 |
|-----|---------------|------------|-------------|

| | | | |
|-----|-------------|------------|--------------|
| DAT | positive =4 | Negative=7 | Not done= 17 |
|-----|-------------|------------|--------------|

| | | | |
|--------------------|-------------|------------|--------------|
| Hyperbilirubinemia | positive =5 | Negative=1 | Not done= 22 |
|--------------------|-------------|------------|--------------|

| | | | |
|----------------|-------------|------------|--------------|
| Hemoglobinuria | positive=11 | Negative=2 | Not done= 15 |
|----------------|-------------|------------|--------------|

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There was not a significant correlation

- between the severity of complications and the volume of transfused product, ($P > 0.05$).
- between the occurrence rate and transfusion time. (am versus pm).



Conclusion



- ABO transfusion mismatch remains a serious hazard of transfusion in our country.
- The frequency of ABO mismatch is suspected to be far more than this rate.
- The most frequent error leading to transfusion of ABO incompatible blood was **failure of patient identification**

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- To decrease ABO-incompatible RBC transfusions a focus on nurse **training** and implementation of additional measures for patient and blood sample identification should be one of our major national priorities.

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Weaknesses -1

- No transfusion speciality or fellowship course in the country
- Most of Hospital Transfusion Committees are not efficiently working.
- There is not any transfusion courses for nurses, general physicians, midwives and ...during their education.
- There is not any ISBT approved software for blood banking and haemovigilance reporting.



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Weaknesses-2

There are some difficulties in purchasing the validated software:

- The Expense: it is not on priority for most hospitals to designate some budget for purchasing these software.

- There is some strategic limitations for us to purchase the software and devices.



Strengths

- No punishment culture
- A centralised organisation
- IBTO is WHO Collaborator in Eastern Mediterranean region for four years.
- A great enthusiasm to achieve our goals



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**“Errors are excusable; ignoring them
is not”**

L.L. Leape 2000



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